Unicondylar Knee Arthroplasty in the U.S. Patient Population: Prevalence and Epidemiology

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Introduction: The success of total knee arthroplasty (TKA) has resulted in increasing utilization and expenditures. However, when only one compartment of the knee is affected, a unicondylar knee arthroplasty (UKA) may be the preferred surgical treatment. The prevalence of unicompartmental arthritis has been estimated to occur in 25-50% of patients. To prepare for the “graying” of the baby boomer generation, we evaluated the prevalence and epidemiology of UKA in the U.S. using two large claims databases.

Methods: The 5% Medicare database (2002-2011; physician files) and MarketScan database (2004-June 2012) were used to identify UKA patients aged 65 years and older and under 65 years, respectively. UKA prevalence was stratified by age and gender, as well as ethnicity, Census region, Charlson index, socioeconomic status, and OA diagnosis. Poisson regression analysis was used to determine if the UKA rates were affected by age, gender, and year.

Results: Between 2002-2011, the number of UKA procedures in the 5% dataset increased from 369 in 2002 to 639 in 2008, but plateaued to 561 in 2011, extrapolating to 7,380, 12,780, and 11,220, respectively, in the 100% Medicare population. For the younger patient cohort, 1,334 UKAs were identified in 2004, which increased to 4,135 in 2009 and then decreased to 3,705 in 2011. The temporal changes in UKA rate was significant (p<=0.0002). For elderly patients, the rate increased from 24.5 UKAs per 100k persons in 2002 to 43.1 UKAs per 100k persons in 2008, followed by a decline to 36.5 UKAs per 100k persons in 2011. For younger patients, the UKA rate was 5.85 per 100k persons in 2004, increasing thereafter but plateauing from 2008 onwards to 7.44 per 100k persons in 2012. TKA prevalence in the elderly population has been relatively stable since 2005 (727 per 100k persons vs. 559 and 725per 100k persons in 2002 and 2011, respectively). There were significant differences in the UKA rate by gender (p<=0.0209) (Figure 1) with higher rates for males. Age-gender interactions were found to be significant (p<=0.0018), i.e., when age differences were stratified by gender (Figure 2). The rates were generally higher in the 65-69 and 70-74 y.o. groups for females, but were highest in the 70-74 and 75-79 y.o. groups for males. The majority of patients had Charlson scores of 0 (=65 y.o.: 40.8%) and 1-2 (=65 y.o.: 40.9%). Few elderly patients were of lower socioeconomic status (5.1%), while most patients had an OA diagnosis (=65 y.o.: 97.3%).

Discussion: The initial surge in UKA utilization has appeared to stabilize after 2008 in the younger population, but decrease in the elderly population. The decrease in UKA rate in the elderly patients after 2008 appears to be driven primarily by the decrease in UKA incidence in females, even though the
incidence has increased for males. TKA prevalence in the elderly population was relatively stable since 2005. Further research is needed to understand the drivers for the changing incidence.

**Significance:** The initial surge in UKA utilization has stabilized after 2008 in younger patients, but decreased in elderly patients. UKA utilization is significantly associated with age and age-gender differences.

![Graph showing the rate of UKA by gender](image)

**Fig. 1:** Rate of UKA by gender (p=0.0209 for Medicare and p=0.0017 for MarketScan)
Fig. 2: Rate of UKA by age-gender for females (top) and males (bottom) (p<=0.0018)